

1 **USB ADAPTER WITH A POWER CONNECTOR**

2 **BACKGROUND OF THE INVENTION**

3 1. Field of the Invention

4 The present invention relates to an USB adapter with a power connector,
5 and more particularly to an USB adapter with a power connector that can supply
6 power without transferring data to an external device that only needs power.

7 2. Description of Related Art

8 Progression in the electronics industry has resulted in the invention of
9 more and more external devices for computers. An external device needs to
10 connect to a computer to work. To achieve it, a computer needs a socket to
11 connect to an external device, while an external device would need a connector
12 to plug into the computer. The socket and the connector must mate so they can
13 work together. The call for a standardized connection between computers and
14 external devices has resulted the invention of the USB (Universal Serial Bus).
15 The Universal Serial Bus (USB) socket/connector has become a standard in the
16 computer industry for some years now. The USB socket/connector gives us a
17 single, standardized, easy-to-use way to connect to an external device.

18 With reference to Figs. 4 and 5, there are two types of USB connectors -
19 type A USB connector (40) and type B USB connector (50). A traditional USB
20 connector will have to either Type A or Type B. The type A USB connector (40)
21 has an inner recess (not numbered) and four pins (not numbered) in the inner
22 recess. The four pins in the type A USB connector (40) are parallel with each
23 other. The type B USB connector (50) may have many configurations and has
24 multiple pins (not numbered) arranged in parallel or in two rows. A common

1 type B USB connector (50) has eight pins (not numbered) arranged in two rows.
2 A type A USB connector (40) connects to a type A USB socket (not shown) and a
3 Type B USB Connector (50) connects to type B USB socket (not shown)
4 respectively.

5 In general, a computer or a notebook computer has a limited number of
6 USB sockets. Various external devices such as a mouse, keyboard, printer,
7 scanner, digital camera, CD-ROM player, MPEG player, reading light or a
8 personal fan can be connected to a computer or a notebook computer. Each
9 device has a USB connector to plug into a USB socket on the computer or
10 notebook computer. When the number of USB sockets on a computer or on a
11 notebook computer is not enough, a USB hub may be plugged into the computer
12 or notebook computer to extend the number of external devices connected to the
13 computer.

14 With reference to Fig. 6, a conventional USB hub has two ends, a USB
15 connector (not shown) attached to one end and multiple USB sockets (10)
16 attached to the other end. The USB connector on the USB hub can plug into any
17 USB socket on the computer, notebook computer or external device. Multiple
18 USB sockets (10) can allow a user to plug in a USB connector (12) from an
19 external device and transfer data through the USB socket (10) to the computer.

20 The external device plugged into the USB socket (10) can obtain power
21 from the host via the USB socket (10) and does not have to connect to an external
22 power supply or use any additional power cables. Since the USB connector has
23 become a standard, USB sockets (10) can be found on every computer, and
24 non-computer related USB powered devices have started to evolve and be seen

1 in the market especially for notebook computer users. Almost any 5 volt DC
2 power driven device can be powered by a USB socket (10). An example of a
3 non-computer related USB powered device can be a reading light, fan, coffee-
4 warmer, notebook cooler or even an electric tooth brush. The non-computer
5 related USB powered device generally utilizes the USB socket (10) just to obtain
6 power from a host computer and the USB connector (12) on the device does not
7 have data wires.

8 A conventional type A USB socket (10) has four pins connected to four
9 wires of which two are power and ground wires, and two are data wires. While a
10 USB hub has multiple USB socket (10) such as the one with four USB sockets
11 (10) on it needs a built-in control circuitry to control the data transferring back
12 and forth between the host computer and the external devices. A built-in control
13 circuitry usually consists of a chipset and various components such as resistors,
14 transistors and capacitors. A conventional hub like this with built-in control
15 circuitry is expensive compared to the related invention. The control chipset and
16 the components for transferring data are unnecessary if the external device just
17 draws power from the host computer.

18 Therefore, the invention provides a USB adapter with a power connector
19 to mitigate or obviate the aforementioned problems.

20 SUMMARY OF THE INVENTION

21 The main objective of the present invention is to provide a cost-effective
22 USB adapter with a power connector to supply power to an external device that
23 draws power but does not transfer data.

24 To achieve the objective, a USB adapter with a power connector in

1 accordance with the present invention comprises a USB adapter and two power
2 wires. The USB adapter has two ends, four wires, a USB connector formed on
3 one end and a USB socket formed on the other end. Two of the four wires are
4 power and ground wires and the other two are data wires. The two power wires
5 have two ends, and one end is electrically connected to the two wires that are
6 power and ground wires in the USB adapter. The other end of the two power
7 wires can connect to a power connector. The USB adapter with a power
8 connector uses two power wires to supply power to an external device that draws
9 power but does not transfer data so the USB adapter with a power connector is
10 cost-effective.

11 Further benefits and advantages of the present invention will become
12 apparent after a careful reading of the detailed description with appropriate
13 reference to the accompanying drawings.

14 BRIEF DESCRIPTION OF THE DRAWINGS

15 Fig. 1 is a perspective view of a first embodiment of a USB adapter with
16 a power connector in accordance with the present invention;

17 Fig. 2 is a top plane view of the USB adapter with a power connector in
18 Fig. 1;

19 Fig. 3 is perspective view of a second embodiment of a USB adapter
20 with a power connector in accordance with the present invention;

21 Fig. 4 is a side plane view of a conventional type A USB connector in
22 accordance with the prior art;

23 Fig. 5 is a side plane view of a conventional type B USB connector in
24 accordance with the prior art; and

1 Fig. 6 is a perspective view of a conventional USB hub and four USB
2 connectors in accordance with the prior art.

3 DETAILED DESCRIPTION OF THE INVENTION

4 With reference to Figs. 1 and 2, a first embodiment of a USB adapter
5 with a power connector in accordance with the present invention comprises a
6 USB adapter (20) and two power wires (26). The USB adapter (20) has a
7 proximal end (not numbered), a distal end (not numbered), four wires (25), a
8 USB connector (22) and a USB socket (23). The USB connector (22) is formed
9 on the proximal end of the USB adapter (20), and the USB socket (23) is formed
10 on the distal end. The USB connector (22) on the USB adapter (20) can be a type
11 A USB connector and plug into a USB socket (not shown) on a host computer or
12 notebook computer. The USB socket (23) on the USB adapter (20) can be a type
13 A USB socket and can be plugged into a USB connector (30) on an external
14 device. The two of the four wires (25) are power and ground wires (not
15 numbered) and the other two of the four wires (25) are data wires (not
16 numbered).

17 Each of the two power wires (26) has a proximal end (not numbered)
18 and a distal end (not numbered), and the proximal ends are electrically connected
19 respectively to the wires (25) that are power and ground wires of the USB
20 adapter (20). The distal ends of the power wires (26) can directly connect to an
21 external device that draws power but does not transfer data or connect to a power
22 connector (24). The power connector (24) can be any kind of connector
23 including a USB connector. Preferably, the power connector (24) is a type A
24 USB connector. The power connector (24) can connect to an external device that

1 needs power but does not transfer data.

2 With reference to Fig. 3, a second embodiment of a USB adapter with a
3 power connector in accordance with the present invention has a power connector
4 (24') different from the first embodiment. The power connector (24') is a
5 standard DC power connector that can connect to an AC to DC power adapter.

6 The present invention is a good substitute for a USB hub to power
7 devices that do not transfer data. Multiple non-computer related USB powered
8 devices include USB powered lights, fans, coffee-warmers, notebook coolers
9 and so on. The non-computer related USB powered devices that draws 5 volt DC
10 power can be powered via a USB socket by the host computer and utilize the
11 USB socket just to obtain power. The USB adapter with a power connector in
12 accordance with the present invention only has power wires to supply power and
13 economize on wires that transfer data. The present invention is cost-effective.

14 Although the invention has been explained in relation to its preferred
15 embodiment, it is to be understood that many other possible modifications and
16 variations can be made without departing from the spirit and scope of the
17 invention as hereinafter claimed.